Mapping the LIBOR Transition

M3 Advisory Partners L.P.

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Executive Summary

- The London Interbank Offered Rate ("LIBOR"), the average interest rate at which major global banks borrow from each other, has been the primary rate used to price floating-rate credit instruments since 1986 and is tied to over $200 trillion of such exposure today[1]
  - Certain flaws identified in LIBOR, such as unexpected volatility in market downturns and vulnerability to manipulation by unscrupulous market participants, led regulators and key constituents to consider moving away from LIBOR
  - In 2017, these groups decided that LIBOR would be phased out
- The Fed has recommended that no new contracts reference LIBOR after December 31, 2021, and the IBA will cease publishing overnight and 1, 3, 6 and 12-month LIBOR on June 30, 2023 – **this timeline leaves less than eighteen months for financial institutions to prepare**
- The following are candidates being considered as the benchmark rates to replace LIBOR:

• Secured Overnight Financing Rate ("SOFR")	• Ameribor Unsecured Overnight Rate ("Ameribor")
• Bloomberg Short Term Bank Yield Index ("BSBY")	• WSJ Prime Rate ("Prime Rate")

- Each replacement option has its own idiosyncratic benefits and limitations, leading some market participants to believe that multiple replacement rates may be introduced
- According to recent surveys, **~78%** of respondents are concerned about the LIBOR transition[2]
  - The Fed has issued robust guidance on what financial institutions should be doing to prepare for the transition to new benchmarks with the goal of reducing the potential impacts of the transition on financial institutions and other market participants *(summary of guidelines presented on page 8 and in the Appendix)*

M3 Partners has extensive experience managing complex business processes and assessing financial risk; we are ready to assist market participants in their transition away from LIBOR

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(1) Per Federal Reserve staff calculations, BIS, Bloomberg, CME, DTCC, Federal Reserve Financial Accounts of the United States, G. 19, Shared Network Credit, Y-14 data. Data are gross notional exposures as of Q4 2020
(2) Per Bloomberg News. *LIBOR Fears Persist for Loan Market with Six Months to Deadline.* (6.25.2021)

LIBOR Transition – Key Facts

What is LIBOR?

- LIBOR is the average interest rate at which major global banks borrow from each other
  - It is based on five currencies: the U.S. dollar, the Euro, the Pound, the Yen, and the Swiss Franc, and serves seven different maturities: overnight/spot next, one week, and one, two, three, six, and 12 months
  - The combination of five currencies and seven maturities leads to a total of 35 different LIBOR rates calculated and reported each business day
  - The most commonly quoted rate is the three-month U.S. dollar rate, usually referred to as the current LIBOR rate
- LIBOR came to prominence with the creation of the syndicated loan market, as banks funded their participation in loans via taking the deposits in the interbank deposit market for the relevant currency of the loan – as the market evolved, banks funded through alternative methods to increase margins
- Apart from being used as a reference rate for loans, a robust derivatives market developed around LIBOR

Catalysts for Transition

- The Global Financial Crisis of 2007 – 2008 revealed several flaws in the LIBOR benchmark, namely that the rate is highly dependent on a bank's confidence in the creditworthiness of other banks – as liquidity dries up, the rate increases, creating more strain on the financial system
- Further, a rate fixing scandal in 2012 created less confidence in the use of LIBOR as a reference rate as it became evident that unprincipled market participants were able to manipulate the benchmark
- In September 2012, the project to reform LIBOR began, and in 2017, the reform was abandoned in favor of transition to a new reference rate

Primary Candidates for LIBOR Replacement

Rate	Calculation
SOFR	• Volume-weighted median of transaction-level tri-party repo data collected from the Bank of New York Mellon as well as GCF Repo transaction data and data on bilateral Treasury repo transactions cleared through FICC's DVP service (obtained from the DTCC) • Each business day, the New York Fed publishes the SOFR on the New York Fed website at approximately 8:00 a.m. ET
BSBY	• Measures the average yields at which large global banks access USD senior unsecured marginal wholesale funding
Ameribor	• Calculated daily as the transaction volume-weighted average interest rate of the AMERIBOR overnight unsecured loans on the American Financial Exchange
Prime Rate[1]	• The Wall Street Journal Prime Rate is an average of 10 large American banks' prime rates, which is published in WSJ on a regular basis • The prime rate is the interest rate charged to a bank's most financially sound customers

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(1) Reference rate often included in fallback language

Transition Scope and Timeline

Scope of LIBOR Exposure

There is approximately $223 trillion in gross exposure tied to LIBOR[1] (over 90% tied to derivatives) – all of which must be transitioned by June 2023:

	Currently Outstanding ($TN)	% of Total	Maturing After June 2023 ($TN)	% of Total
Derivatives	$214.0	96.0%	$68.0	93.0%
Loans	6.2	2.8%	3.2	4.4%
Bonds	1.1	0.5%	0.3	0.4%
Securitizations	1.6	0.7%	1.6	2.2%
Total USD LIBOR Exposure	**$222.9**	**100.0%**	**$73.1**	**100.0%**

($ trillions)		Currently Outstanding	Maturing After June 2023
Over-the-Counter Derivatives	Interest Rate Swaps	$81	$46
	Forward Rate Agreements	47	–
	Interest Rate Options	20	12
	Cross Currency Swaps	23	8
Exchange Traded Derivatives	Interest Rate Options	32	–
	Interest Rate Futures	11	2
Business Loans	Syndicated Loans[2]	2.0	1.1
	Nonsyndicated Business Loans[2]	1.3	0.4
	Nonsyndicated CRE/Commercial Mortgages	1.5	0.8
Consumer Loans	Retail Mortgages	1.3	0.8
	Other Consumer Loans	0.1	0.1
Bonds	Floating/Variable Rate Notes	1.1	0.3
Securitizations[3]	Mortgage-backed Securities (incl. CMOs)	0.8	0.8
	Collaterized Loan Obligations	0.5	0.5
	Asset-backed Securites	0.2	0.2
	Collaterialized Debt Obligations	0.1	0.1
Total USD LIBOR Exposure		**$223**	**$73**

Transition Timeline

2021

March 5, 2021

- ICE Benchmark Administration ("IBA") and Financial Conduct Authority announced their intention to cease publishing one-week and two-month USD LIBOR rates after December 31, 2021[4]

December 31, 2021

- IBA will cease publishing one-week and two-month USD LIBOR settings
- Fed recommendation of no new loans with LIBOR as reference rate

2022

2023

June 30, 2023

- IBA will cease publishing the overnight and 1, 3, 6 and 12-month USD LIBOR settings

(1) Per Federal Reserve staff calculations, BIS, Bloomberg, CME, DTCC, Federal Reserve Financial Accounts of the United States, G. 19, Shared Network Credit, Y-14 data. Data are gross notional exposures as of Q4 2020
(2) Figures do not include undrawn lines
(3) Estimated amounts maturing after June 2023 based on historical prepayment rates
(4) Per the International Swaps and Derivatives Association ("ISDA"), this 'Index Cessation Event' results in the supplementation of the referenced index with the fallbacks specified within the definition of the index

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Replacement Options: Potential Benefits and Issues

Each of the primary candidates for replacement of LIBOR presents unique benefits and possible issues for lenders and borrowers:

Rate	Potential Benefits	Potential Issues
SOFR	• Endorsed by the group selected by the Federal Reserve to lead the LIBOR transition • Based on actual, high volume overnight transactions in the repo market, therefore an accurate way to measure borrowing costs • Supported by ~$1 trillion of daily trading, which offers protection from corruption that plagued LIBOR	• Does not presently offer a forward-looking term rate • Not tied to credit risk; more like a risk-free rate than an unsecured cost of capital, particularly in crisis, when funding costs could increase but SOFR-backed lending rates decline[1] • Due to lack of credit sensitivity, less compatible with bank loans, particularly revolvers with funding risk • Only accounts for overnight transactions; may not be the best estimate of capital costs for longer term borrowings
BSBY	• International Organization of Securities Commissions ("IOSCO") compliant and approved by S&P • Credit sensitive; may be superior instrument for syndicated loans • Correlates well with USD LIBOR[2] – (historical trends presented on page 7) • Based on a 3-day moving average, which will serve to limit the impact of daily market volatility on rates	• Double-digit billions in daily trading volume[2] would back trillions of dollars in contracts; relatively illiquid underpinnings, particularly in times of market turmoil • Complicated calculation based on various underlying financial instruments makes understanding drivers more difficult • Bank-to-bank lending, in relatively illiquid markets, may lead to vulnerability to market manipulation
Ameribor	• Similar to LIBOR, with credit spread component, which could lead to ease of transition • Reflects what smaller banks pay to lend to each other; could represent actual funding costs for smaller and medium size lenders that fund themselves	• Does not presently offer a forward-looking term rate • Minimal market liquidity • May not be appropriate for larger banks that borrowed at LIBOR historically
Prime Rate	• Fixed rate, which usually remains unchanged for extended periods of time, providing confidence in short-term rate stability • Likely included as the fallback language in existing credit agreements	• Unresponsive to financial market shifts, which makes this rate unreflective of borrowing costs, especially in volatile markets • Lack of flexibility from no short-term rate options leads to more expensive short-term borrowing costs

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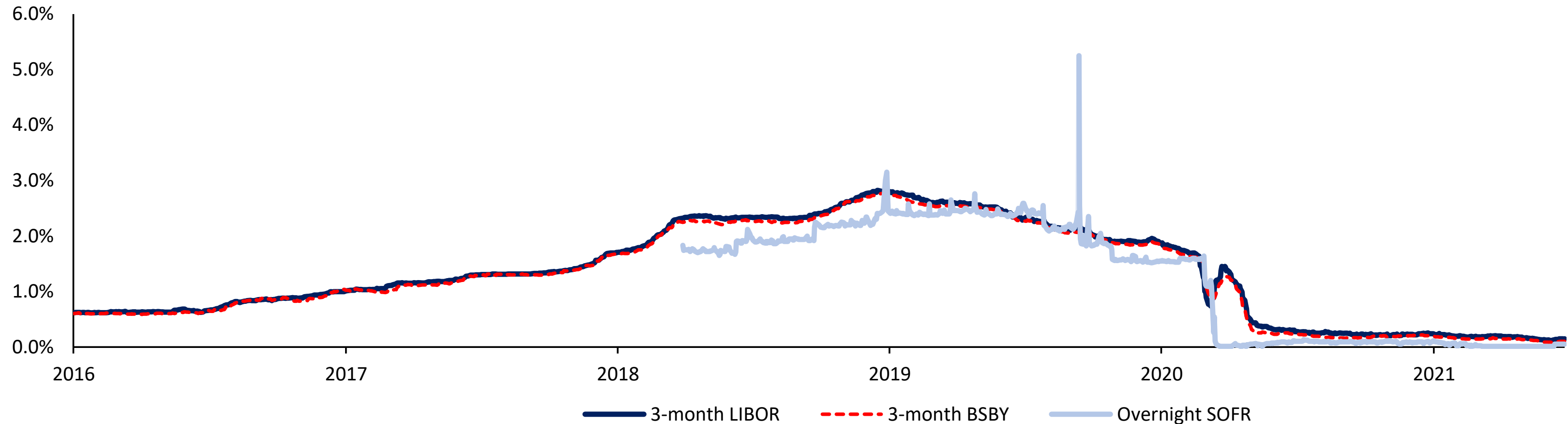
(1) During periods of economic instability, bank funding costs may rise, while investors would look for safety in U.S. treasuries, driving repo rates, on which SOFR is pegged, downward
(2) Bloomberg Professional Services. *White Paper: Introducing the Bloomberg Short-Term Bank Yield Index (BSBY).* (12.18.2020)

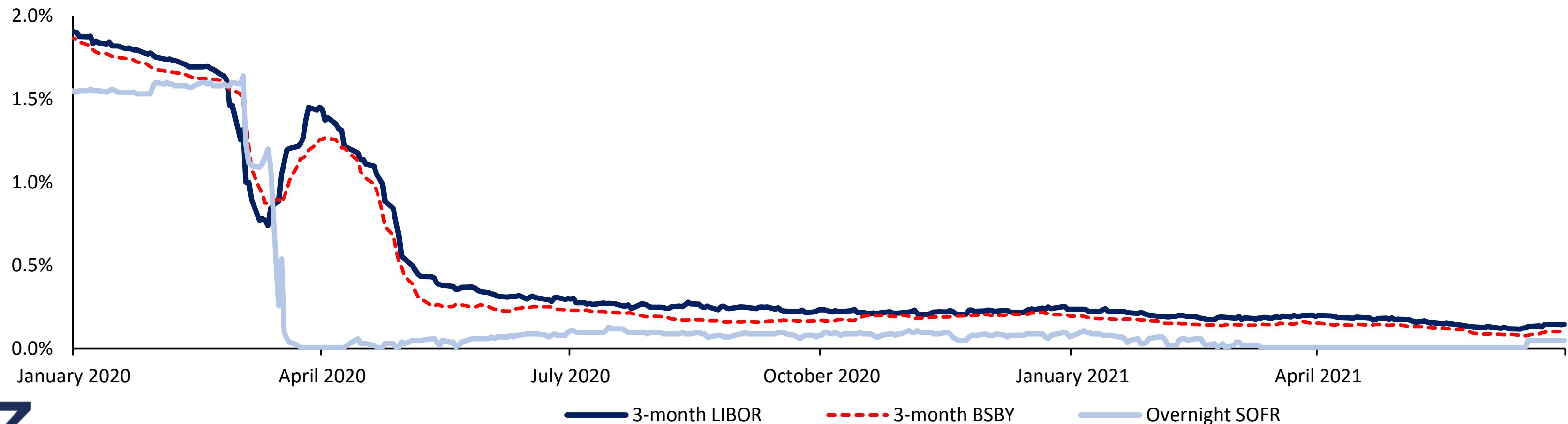
LIBOR Replacement Options - Historical Trends

The historical divergence of LIBOR and SOFR in certain market conditions is one reason market participants have pushed for the introduction of multiple replacement rates

- In September 2019, a significant drop in reserves due to the corporate tax deadline (9/15) and associated Treasury issuance led to a surge in the SOFR overnight rate; LIBOR and BSBY did not see such drastic increases



- BSBY also tracked much better to LIBOR in Spring 2020 when COVID-19 began. Investors flocking to safety and the Fed's rapid injection of liquidity into the economy drove SOFR down while concerns about bank creditworthiness drove LIBOR up



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Source: Bloomberg (US0003M Index, BSBY3M Index and SOFRRATE Index) as of 06/30/2021

Process Recommendations for Transition

M3, in accordance with the Fed's guidance, recommends impacted institutions:

1. Develop a focused LIBOR transition plan with clearly defined responsibilities, alignment across business functions and understanding of potential operational shortfalls that may hinder the plan's execution
2. Identify and continue to monitor financial exposure to LIBOR for compliance with appropriate regulatory provisions
3. Ensure that models and systems that use LIBOR are adjusted as necessary to operate using a replacement rate
4. Address existing contracts with inadequate fallback language and refrain from entering new contracts without fallback language
5. Communicate with counterparties, clients, consumers, and internal stakeholders about the LIBOR transition
6. Develop oversight to provide transition progress reports to stakeholders and regulators and ensure timely transition completion

The Fed guidelines for the institutional transition from LIBOR can be found in the *Appendix*

M3 has the expertise and operational capabilities to comprehensively assist financial institutions with the full transition process

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Many existing credit documents lack the appropriate language to automatically reference a benchmark other than LIBOR – a “fallback” reference

According to a 2020 Fitch Survey, ~25% of loan contracts contain fallback language not intended for permanent LIBOR cessation[(1)]; in light of disparate lender groups and potentially reluctant borrowers, getting all parties to consent to amend agreements with a replacement rate could prove challenging, time consuming and expensive

Fallback Language

- On April 6, 2021, New York’s Governor signed legislation designed to provide fallback language in contracts governed by New York law
- Under the new legislation, on the applicable LIBOR replacement date (December 31, 2021 or June 30, 2023 depending on the rate) for any instrument that contains no fallback provisions or contains fallback provisions that result in a benchmark replacement that is based in any way on LIBOR:
  - The LIBOR-based rate shall be replaced by a recommended benchmark replacement rate (likely SOFR)
  - Any fallback language based on LIBOR shall be disregarded
  - A determining person (such as a trustee) shall have the authority to select the recommended benchmark replacement as the benchmark replacement
- Contracts with fallback provisions that result in the prime rate, federal funds rate or other non-LIBOR index as a replacement rate are not subject to this legislation’s replacement provisions

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Source: Senate Bill S297B
(1) Based on a sample of 691 institutional loans in Credit Suisse Leveraged Loan Index

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Appendix

Fed Recommendations for Transition

The Fed has issued guidance (summarized below) for firms to transition their exposure from LIBOR, which can be found here:

- Firms with less than $100 Billion in Total Consolidated Assets supervised by the Federal Reserve: https://www.federalreserve.gov/supervisionreg/srletters/SR2107a1.pdf
- Firms with more than $100 Billion in Total Consolidated Assets supervised by the Federal Reserve: https://www.federalreserve.gov/supervisionreg/srletters/SR2107a2.pdf
- All Buy-Side / Asset Owners: https://derivativesreporeport.perkinscoieblogs.com/wp-content/uploads/sites/11/2020/02/A-Summary-of-The-ARRCs-Buy-Side-Checklist.pdf

	Process Step	Recommendation
1	Transition Plan	Develop a LIBOR transition plan that includes a governance structure that clearly defines roles and responsibilities needed to execute the plan: • The plan should align with the firm's risk management function across all business and product lines • The plan should address how the firm will identify and address both financial impacts and operational gaps in order to complete the plan • The firm should define, and identify within the plan, contingencies that could impact the success of the plan or of components of the plan • Senior leadership of the firm should provide the appropriate budget and resources to support the implementation of the plan • Senior leadership should consider the engagement of advisors as additional resources to oversee the plan process and implementation
2	Financial Exposure Measurement and Risk Assessment	Measure financial exposures to LIBOR, including any financial product that references LIBOR (may include investments, derivatives, and loans): • Exposure measurement should identify exposures (both proprietary and custodial) by product, counterparty, and business line • The firm should have adequate controls and review processes in place to maintain a reasonable level of reporting accuracy and completeness • Exposure measurement reporting should be frequent (e.g., monthly or quarterly) • The firm should have the ability to identify the proportion of its LIBOR exposure that will run off before the relevant tenor ceases (either December 31, 2021, or June 30, 2023)
3	Operational Preparedness and Risk Control	Identify all internal and vendor-provided systems and models that use or require LIBOR as an input and make necessary adjustments to provide smooth operation of those systems and models ahead of cessation of LIBOR: • The firm should have a complete inventory of affected systems and models ahead of the cessation of LIBOR, ranked by criticality or significance • Where the firm uses vendor-provided systems, the firm should confirm with the service provider that necessary updates will be available for testing and implementation before December 31, 2021 • The firm should establish a contingency plan if a service provider is unable to deliver a solution in a timely manner

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Fed Recommendations for Transition

	Process Step	Recommendation
4	Legal Contract Preparedness	Identify all contracts that reference LIBOR and refrain from entering into contracts without fallback language: • The firm should identify contracts that lack fallback language that defines an alternative reference rate after LIBOR is no longer available • For contracts that lack adequate fallback language and will mature after the relevant tenor ceases, the firm's transition plan should address how the firm will determine the impact of LIBOR's cessation on these contracts and the steps the firm will take to address these contracts prior to LIBOR's cessation • If the firm is a major user of derivatives, it should consider adhering to the ISDA IBOR Fallback Protocol and IBOR Fallback Supplement to implement robust fallbacks for legacy and new derivative contracts • New LIBOR contracts entered into before December 31, 2021, should have robust fallback language that includes a clearly defined alternative reference rate after LIBOR is no longer available • Any firm that invests in syndicated loans should work closely with its relevant agent banks to ensure the agent banks appropriately address fallback language in syndicated loan contracts
5	Communication	Communicate with counterparties, clients, consumers, and internal stakeholders about the LIBOR transition: • The firm should ensure compliance with the requirements of the Truth in Lending Act and other applicable laws and regulations and with the prohibition on engaging in Unfair or Deceptive Acts or Practices • The firm should implement training for employees to inform all relevant staff of the LIBOR transition, how the transition will affect staff work, and how staff should communicate the implications of the transition externally • Firms that lend money should communicate with their borrowers as soon as practicable in order to ensure an orderly transition of their loan products
6	Oversight, Reporting and Tax Considerations	The group designated to oversee the transition plan should ensure timely updates to senior management, the board of directors, and the relevant regulatory authorities: • The group should provide regular updates on plan progress and alerts regarding any significant or material delays in plan progress, including gaps or obstacles that could impede plan completion • If the firm is a foreign entity, the firm should provide updates on the LIBOR transition efforts to the U.S. Chief Risk Officer and the U.S. Risk Committee The firm should determine the implications of the transition on accounting, reporting, and NAV, as well as work closely with tax professionals to determine tax and regulatory considerations

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